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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,892	06/27/2003	Richard W. Siegel	0094.067A	7804

23405 7590 12/13/2004

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EXAMINER	
RAYFORD, SANDRA M	

ART UNIT	PAPER NUMBER
1772	

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/608,892	SIEGEL ET AL.	
	Examiner	Art Unit	
	Sandra M. Nolan	1772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) *1-6 and 23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-19,21 and 22* is/are rejected.

7)☒ Claim(s) *20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12-1-03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims

1. Claims 1-23 are pending. Claims 1-6 and 23 are withdrawn.

Election/Restrictions

2. The office acknowledges Applicant's election without traverse of claims 7-22 in the reply of 25 October 2004, after the restriction requirement mailed 04 October 2004.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 01 December 2003 was considered by the examiner.

Allowable Subject Matter

3. Claim 20 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The examiner has found no available prior art that teaches the production of nanotubes via freeze-drying in which an intermediate centrifugation step is used.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claim 7 is rejected under 35 U.S.C. 102(e) as being anticipated by Kim (KR 2002040644A; abstract only)

Kim teaches crystalline nanotubes (title) made by lyophilizing a colloidal dispersion of ferrite (detailed description, first sentence).

The self-bonding character of the ferrite is deemed inherent because nanotubes form from its dispersions.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 7-19 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Chang et al (US 6,420,293).

Kim is discussed above. While it teaches the use of ferrite particles of 20 nm size, it fails to teach the oxides, concentrations, pH values, or dispersion diluent claimed.

Chang teaches that aluminum, titanium and other ceramic oxides (col. 1, lines 44- 46) can be made into nanotube fillers (abstract).

The references are analogous because they both teach the production of nanotubes.

It would have been obvious to one having ordinary skill in the art at the time of the invention to employ the process of Kim to make nanotubes containing the oxides of Chang in order to produce crystalline nanotubes.

The motivation to use the Kim process to make nanotubes from Chang's oxides is found in Kim's title, where crystalline nanotubes are taught.

The concentration of nanoparticles in the dispersion and the use of water for same are matters of engineering choice, depending upon the drying capacity of the equipment used to make them and the low cost of water.

The use of controlled pH to stabilize dispersions is well known.

Citation as of Interest

10. Fenniri (US 6,696,565) produces organic nanotubes from aqueous solutions.

Conclusion

Any inquiry concerning this action should be addressed to Sandra M. Nolan-Rayford, at 571/272-1495. She can be reached Monday through Thursday, from 6:30 am to 4:00 pm, ET. Her supervisor, Harold Pyon, can be reached at 571/272-1498. The fax number for patent application documents is 703/872-9306.

S. M. Nolan-Rayford
Primary Examiner
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